Emissions
Measurement
Solutions

SEMTECH®–MPS

Micro Proportional Sampling System

A SEMTECH ECOSTAR Product

On Board Emissions Analyzers

Test Cell Emissions Analyzers

Emissions Testing Services

Environmental Applications

The SEMTECH-MPS is a small and robust partial flow dilution system that meets the requirements of both US EPA CFR 40 part 1065 and ISO 16183. It can be used in conjunction with the SEMTECH-FEM from the SEMTECH ECOSTAR product line as a proportional diluter, or as a stand-alone constant dilution system. It is also designed to work seamlessly with the SEMTECH-PFS for the measurement of particulate matter. The system uses a remote diluter, which significantly simplifies installation, as the diluted sample can be transported as far as necessary. When used with other modules from the SEMTECH ECOSTAR product line, the modules lock together with side handles to ensure a secure system setup. Quick connect brackets on the rear of the unit provide cable management. A full color touch screen enables system setup, basic functions, and a live view of the data and system monitoring.

System Features and Benefits

High Speed: Operating at speeds up to 10 Hz, the system provides nearly instantaneous adjustment of sample flow.

Configurable Dilution Ratios: The unit can be set to dilution ratios ranging from 4:1 to 60:1.

Direct Sample Path: Diluted sample is routed directly from the MPS to the PFS through a gas interconnect, which joins the bottom outlet of the MPS module to the top inlet of the PFS module.

Graphical Panel Display: Monitor live data, adjust settings in real-time, and easily perform basic functions, directly from the analyzer front panel's full color touch screen.

Power Supply Monitoring: Power can be either 12 VDC, 110 VAC or 220VAC, with both current and voltage monitoring.

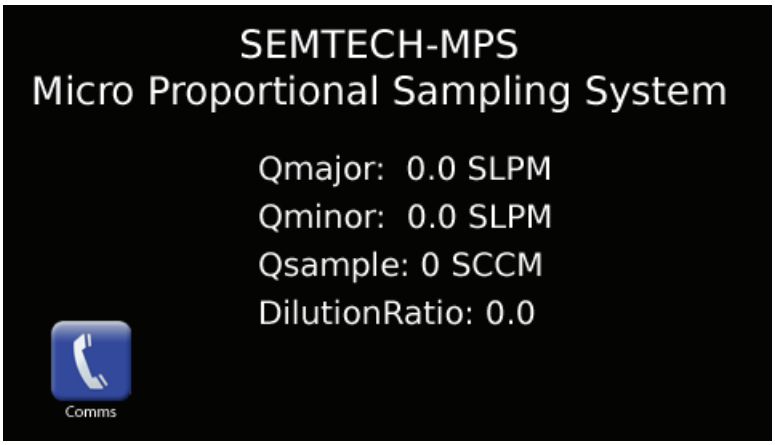
1065 Compliant: The SEMTECH-MPS meets the EPA's 1065 compliance requirements for in-use testing.

Weatherproof Construction: The unit can be used off-road and in other harsh environments. All components are weatherproof to IP54 (NEMA 3) standards.

Shock Resistance: The mechanical design has been optimized for resistance to shock and vibration, ensuring accurate data in the most rugged of in-use environments.

Design Details: Over a decade of experience in in-use emissions testing has gone into the design details of the SEMTECH ECOSTAR system, including:

- EMI protection, including gaskets, filters and capped connectors
- Stress relief for pneumatic connections
- Channels for cable management
- Standard Swagelok™ bulkhead connectors
- Rugged Deutsch connectors for power and auxiliary connectors
- Handles that lock to other SEMTECH ECOSTAR modules for stable system integration



Graphical Touch Screen

Remote Dilution

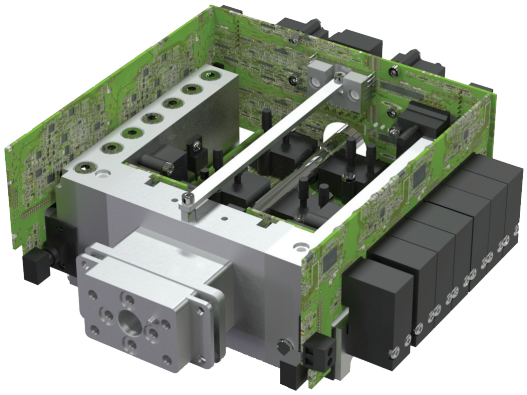
US EPA regulations and sound engineering practice dictate that, when measuring exhaust particulate mass, the full flow of exhaust must be maintained at the exhaust temperature, and that the exhaust sample may only be transported a limited distance prior to dilution for measurement. Once the sample has been diluted, the aerosol is stabilized, and the diluted exhaust sample may be transported as needed to reach the measurement device. While large trucks may be able to contain the measuring equipment within the required distance of the exhaust, it is difficult, if not impossible to do so with smaller vehicles. For this reason, Sensors has developed a remote diluter, which is compatible with the SEMTECH Micro Proportional Sampling (MPS) System.

Remote Diluter

The Technology

The SEMTECH-MPS is a partial flow dilution system that controls the dilution air flow with a multi-bit parallel solenoid array. Each solenoid is fitted with a critical flow orifice to provide precise and repeatable flow characteristics. The system uses a signal from the EFM to establish a diluted flow that is proportional to the total raw exhaust flow. This patented technology operates at 10 Hz, providing a near instantaneous adjustment of sample flow. The MPS meets the requirements of US EPA CFR40 1065 and ISO 16183.

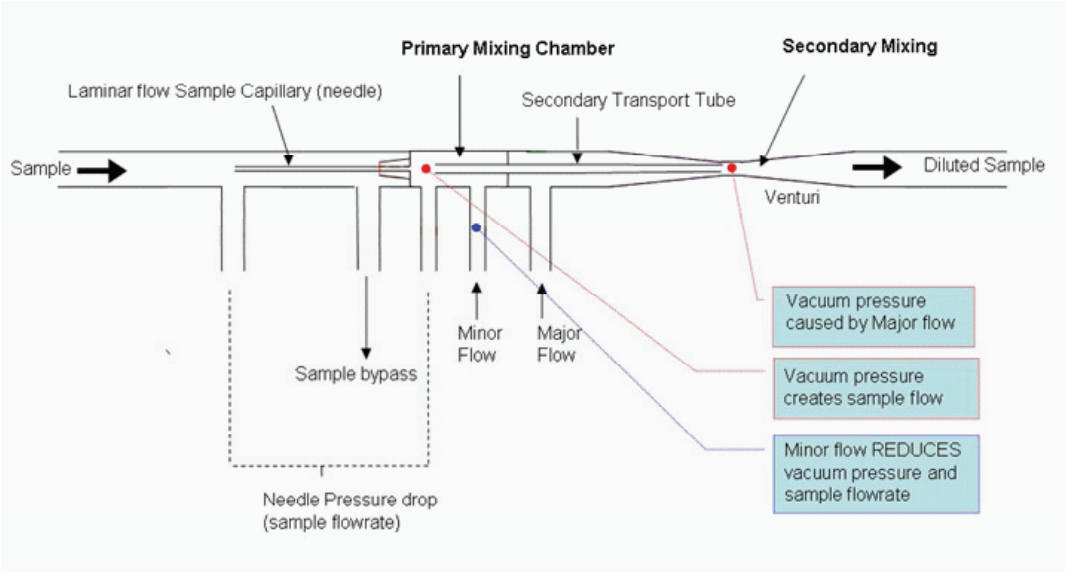
The cross-sectional diagram below illustrates the operation of the SEMTECH Micro Dilution System. The exhaust sample is extracted through a laminar flow capillary and immediately mixed with the primary (minor) dilution flow. This diluted exhaust then flows through a secondary transport tube to the throat of the venturi, where it mixes with the secondary (major) dilution air. The major dilution flow rate passing through the venturi creates the vacuum needed to draw the sample. This allows a sample to be extracted and the diluted sample to be delivered at or near atmospheric pressure.



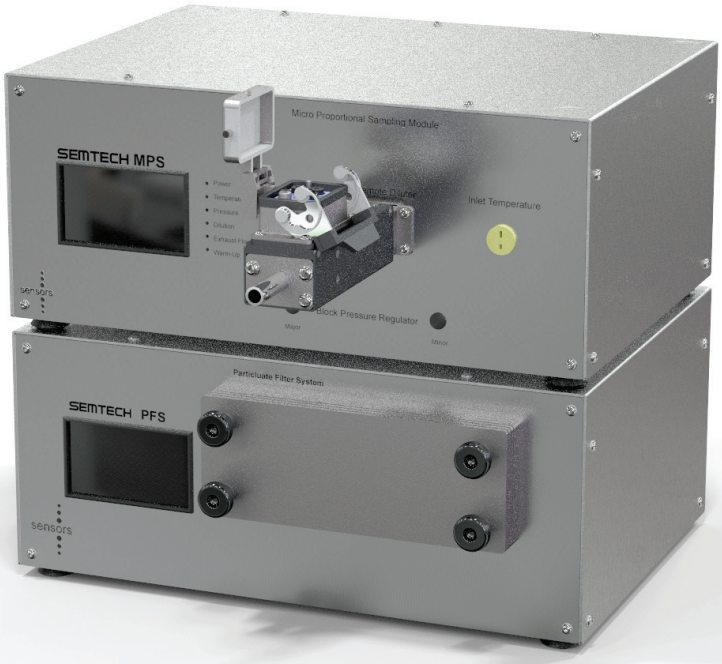
Solenoid Assembly

User Support

As with all SEMTECH products, the MPS comes with a wide range of customer support. Sensors' Remote Support, powered by WebEx, enables our trained technicians to view your SEMTECH unit in real-time, to help answer your questions, diagnose issues, and evaluate data, without requiring any additional software. The customer portal contains a forum for users to share insights on best practices for in-use emissions testing, and to stay up to date with the latest software releases, manuals, tehcnical service bulletins and tips and tricks.



MPS Cross Section



Micro Proportional Sample System with Particulate Filter System

SEMTECH-MPS Specifications	
Sample Flow Rate	< 5.0 l/min
Outlet Flow	Up to 14 l/min
Constant Dilution Ratio	User selectable 4:1 to 60:1
Proportional Dilution Ratio	5:1 to 7:1 at maximum exhaust flow
Operating Speed	10 Hz
Power Requirement	12 VDC; 110-220 VAC
Storage Temperature	Dry -10° to 60°C ambient
Operating Temperature	-10° to 45°C ambient
Communications	Ethernet, USB
Dimensions	43.6 cm x 30.8 cm x 18.0 cm (WxDxH)
Weight	19 kg
Electromagnetic interference and susceptibility	CE Standards: IEC 61326:2002-2

NOTE: Specifications are subject to change without notice. While due caution has been exercised in the production of this document, possible errors and omissions can occur.

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